

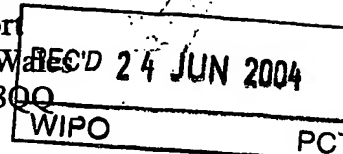


TU 11/2004/02362.  
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INVESTOR IN PEOPLE

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Cardiff Road

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NP10 8QQ



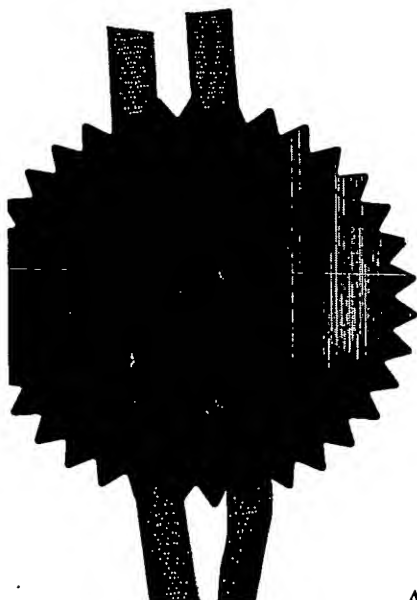
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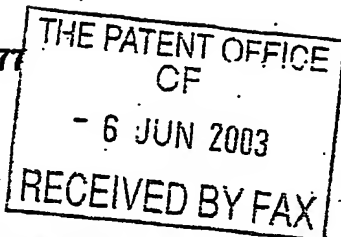
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Signed *Andrew Gensey*  
Dated 16 June 2004



# Request for grant of a patent

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The Patent Office

Cardiff Road  
Newport  
South Wales  
NP9 1RH

1. Your reference

P3131

2. Patent application number

(The Patent Office will fill in this part)

0313046.5

6 JUN 2003

3. Full name, address and postcode of the or of each applicant (underline all surnames)

Huntleigh Technology PLC  
310-312 Dallow Road  
Luton  
Bedfordshire  
LU1 1TD

Patents ADP number (if you know it)

506907001

If the applicant is a corporate body, give the country/state of its incorporation

United Kingdom

4. Title of the invention

Inflatable Pad

5. Name of your agent (if you have one)

"Address for service" in the United Kingdom to which all correspondence should be sent (including the postcode)

Shalini Thaker  
Group IP Department  
Huntleigh Technology PLC  
310-312 Dallow Road  
Luton  
Bedfordshire  
LU1 1TD

Patents ADP number (if you know it)

711263004

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and (if you know it) the or each application number

Country

Priority application number  
(if you know it)

Date of filing  
(day / month / year)

7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

Number of earlier application

Date of filing  
(day / month / year)

8. Is a statement of inventorship and of right to grant of a patent required in support of this request? (Answer "Yes" if:

Yes

- a) any applicant named in part 3 is not an inventor, or
  - b) there is an inventor who is not named as an applicant, or
  - c) any named applicant is a corporate body.
- See note (d))

## Patents Form 1/77

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Continuation sheets of this form -

Description 4

Claim(s) 1

Abstract 1

Drawing(s) 3

10. If you are also filing any of the following, state how many against each item.

Priority documents -

Translations of priority documents -

Statement of inventorship and right to grant of a patent (Patents Form 7/77) -

Request for preliminary examination and search (Patents Form 9/77) 1

Request for substantive examination (Patents Form 10/77) 1

Any other documents -  
(please specify)

11.

I/We request the grant of a patent on the basis of this application.

Signature

Date 6 June 2003

12. Name and daytime telephone number of person to contact in the United Kingdom

Tracey Long (01582) 745812

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Patents Form 1/77

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DUPLICATE

INFLATABLE PAD

This invention relates to alternating pressure pads, and in particular to alternating pressure pads of the kind used in the prevention and management of decubitous ulcers in bedridden patients.

The formation of decubitous ulcers, commonly known as bed sores, results from, amongst other things, the pressure applied to certain portions of the skin of a bedridden patient. It is known to meet the requirement for the prevention and management of decubitous ulcers with an alternating pressure pad comprising two series of inflatable cells which are interleaved, one series within the other, the cells alternately inflated to support a patient at different locations. Typically, inflation and deflation cycles may last from under two minutes for a gentle massaging effect to over twenty minutes.

Typically, large cells have been used in the form of an elongate cylinder extending linearly straight across a pad. However, these pads have experienced problems in that the alternating inflation and deflation of adjacent cells tends to induce movement of the user down the pad, requiring the user to be manually re-positioned by a nurse or carer. This movement is uncomfortable to the user and areas of the body that require pressure relief from a deflated cell are moved onto an inflated cell resulting in reduced pressure relief for the user.

A further disadvantage encountered with such cells is that a user's bony protuberances, for example, their heels can fall inbetween the inflated cells and rest on the support beneath, therefore experiencing the high pressures likely to cause pressure sores. Furthermore, as the support backrest or pillows are raised to support the user in a seated position, the cells have tended to

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separate out under the user's sacrum resulting in the user bottoming and resting on the support beneath the pad. Again, the pressure relief for the user is compromised.

5       The present invention seeks to make improvements.

Accordingly, the present invention provides an alternating pad comprising at least two sets of alternately inflatable cells, the cells extending linearly transversely along the pad and held in place on  
10 a pad base by retaining means, characterised in that the retaining means urge the cells to describe a curve across the pad. By urging the cells to assume a curve, the pad overcomes the problem in prior art alternating linear celled pads, of the cells moving apart in relation to  
15 each other, creating gaps that parts of a user's body could fall through. The cell axis as a curve creates a more stable structure, resulting in reduced movement of the user along the pad thereby increasing user comfort and the pressure relief obtained.

20       Preferably, the retaining means are releasable. In a preferred embodiment the retaining means secure the opposite ends of each cell at a predetermined distance from the centre linear axis of the cell. More preferably, the retaining means secure the central region of the  
25 cells along the centre linear axis of the cell. In the preferred embodiment, the retaining means comprise loop straps fixed to the pad base retaining the central region of each cell and hook type fasteners retaining each opposite end of the cell.

30       By moving the fixing points of the opposite ends of each cell away from the same centre line as the centre region of the cell held in the loop straps, the loop straps are tensioned. In use, when a user exerts force in lying or sitting upon the cell surface, the cells are not

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able to move or rotate as with existing prior art pads as the loop straps in their tensioned state have no room to manouver. The resulting cell axis is a curve creating a more stable structure and has been seen to dramatically  
5 reduce the movement of a user along the pad with improved user comfort and enhanced pressure relief.

The invention will now be described by way of example only, with reference to the accompanying figures in which:-

10 Figure 1 is a schematic view of a pad according to the invention;

Figure 2 is a schematic view showing the retaining means of the cells of the pad;

Figure 3 is a schematic view of the retaining means  
15 of a preferred embodiment of the invention; and

Figure 4 is a plan view of the retaining means in Figure 3.

Figure 1 shows a plan view of a pad 10 comprising a bank of interleaving linear cells 2 extending  
20 transversely of the pad 10. As shown in Figures 1 and 2, loop straps 1 hold the central section of the cells 2 linearly in parallel with the cell axis 11 whereas the opposite ends 3 of the cells 2 are secured a pre-determined distance 4 off-set from the cell axis 11. The  
25 distance 4 can vary along the length of the pad.

By fixing of the ends 3 of the cells 2 at a distance 4 away from the cell axis, each end 3 of the cell 2 is pulled away from the centre axis of the cell, the loop straps 1 holding the central section of the cell become  
30 tensioned, preventing the central cell section from moving or rotating.

The fact that there is no rotation of the cells is a major advantage because one of the main reasons for the prior art alternating pads inducing downward movement of

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the user as the cells alternately inflate and deflate, is that with the cell ends anchored on a common linear axis with the loop straps, the loop straps are allowed to pivot about their anchor points and the cells to rotate under a user supported thereupon. These actions act in a similar manner to a conveyor belt. The rising cell supports the user, moves or rotates down the bed, deflates, rises again in its original position and the process continues over and over again.

Moreover, in these prior art alternating pads when a user is positioned in the seated position, a gravitational load is applied to the cells as gravity urges the user down the pad. The resultant movement is uncomfortable to the user and areas of the body that require pressure relief are moved from the deflated cell providing the pressure relief onto an inflated cell with increased contact pressure and resultant compromise in pressure relief.

In a preferred embodiment, each cell end 3 is fitted with a anchor shaped hook 20 which is inserted into a corresponding slot on the pad base 12. (See Figures 3 and 4). The anchor hook 20 is rotated by 90 degrees to align the hook ends 21 with mating apertures 13 within the base 12. The hook ends 21 enter the apertures 13 and secure the cell end 3 to the pad base 12. The cells can be detached from the base 12 by reversing the above procedure.

Other retaining means can be used to secure the cells in place in the manner described above to achieve the same effect of the cell assuming a curved shape across the pad.

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## CLAIMS:

1. An alternating pad comprising at least two sets of alternately inflatable cells, the cells extending  
5 linearly transversely along the pad and held in place on a pad base by retaining means, characterised in that the retaining means urge the cells to describe a curve across the pad.
- 10 2. An alternating pad as claimed in claim 1 characterised in that the retaining means are releasable.
3. An alternating pad as claimed in claims 1 or 2 characterised in that the retaining means secure the  
15 opposite ends of each cell at a predetermined distance from the centre linear axis of the cell.
4. An alternating pad as claimed in claim 3 characterised in that the retaining means also secures  
20 the central region of the cells along the centre linear axis of the cell.
5. An alternating pad as claimed in claim 4 characterised in that the retaining means comprise loop  
25 straps fixed to the pad base retaining the central region of each cell and hook type fasteners releasably retaining each end of the cell.
6. An alternating pad substantially as herein claimed  
30 and described with reference to the accompanying drawings.



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## ABSTRACT:

A pad 10 of interleaving linear cells 2 has loop straps 1 to hold the central section of the cells 2 linearly in parallel with the cell axis 11, whilst the opposite ends 3 of each cell 2 are secured a pre-determined distance 4 off-set from the cell axis 11. The distance 4 can vary along the length of the pad.

By fixing of the ends 3 of the cells 2 at a distance 4 away from the cell axis, each end 3 of the cell 2 is pulled away from the centre axis of the cell, the loop straps 1 holding the central section of the cell become tensioned, preventing the central cell section from moving or rotating. The resulting cell axis is a curve 15 creating a more stable structure and has been seen to dramatically reduce the movement of a user along the pad with improved user comfort and enhanced pressure relief.

Figure 2 to accompany abstract.

20

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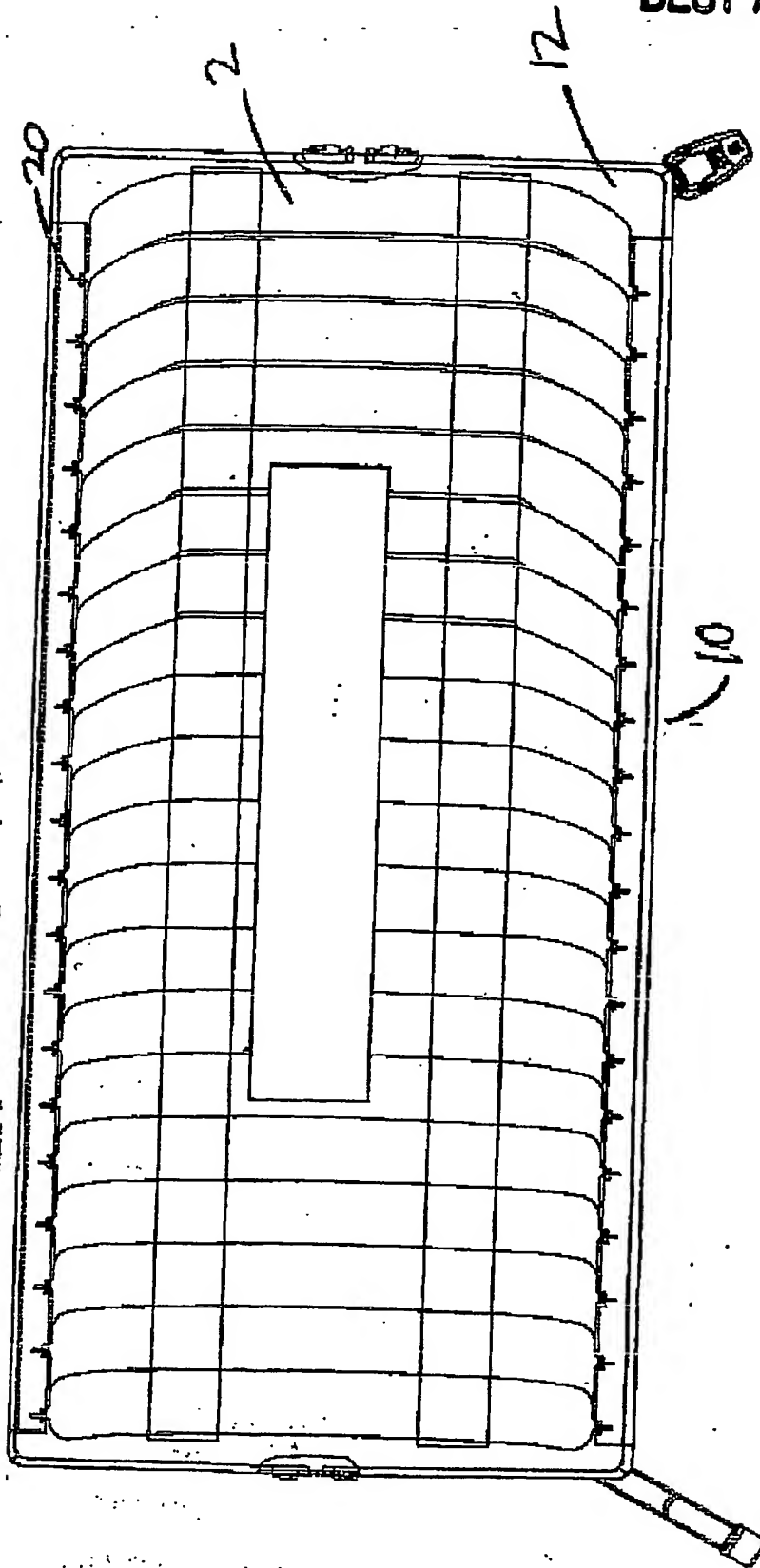
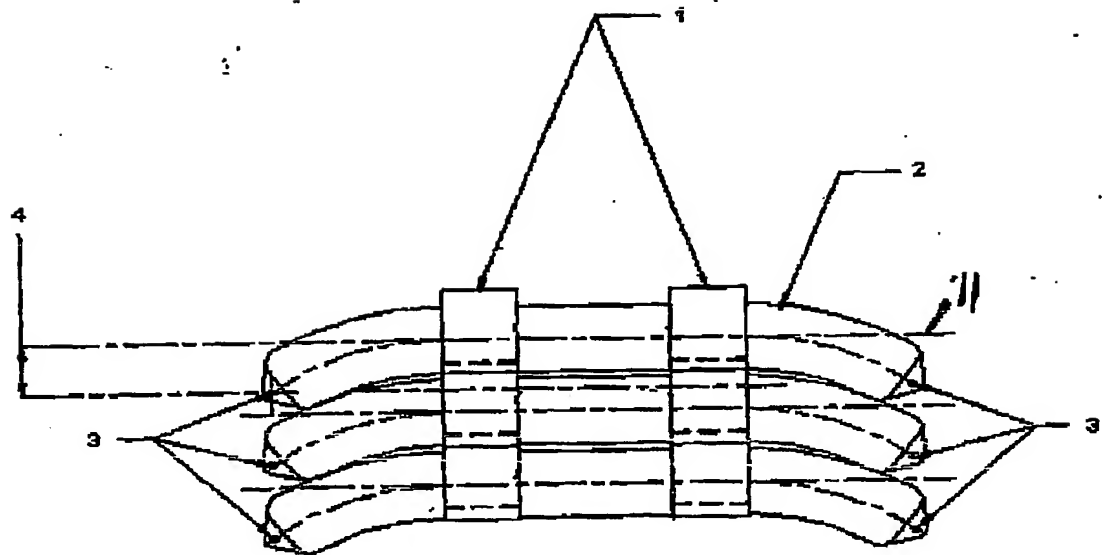


Figure 1

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**Figure 2**

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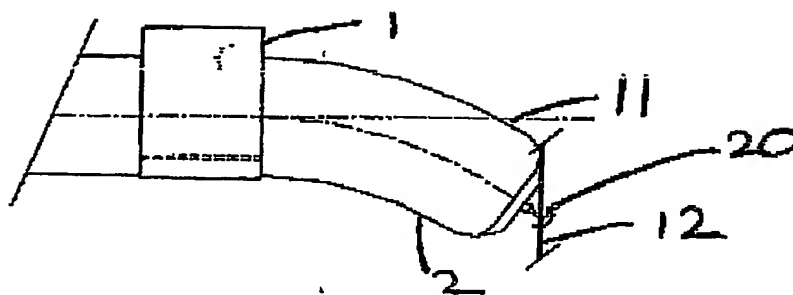


Figure 3

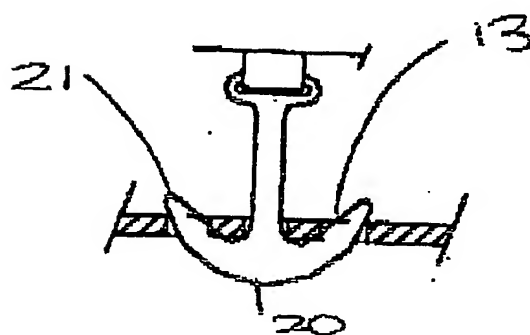


Figure 4